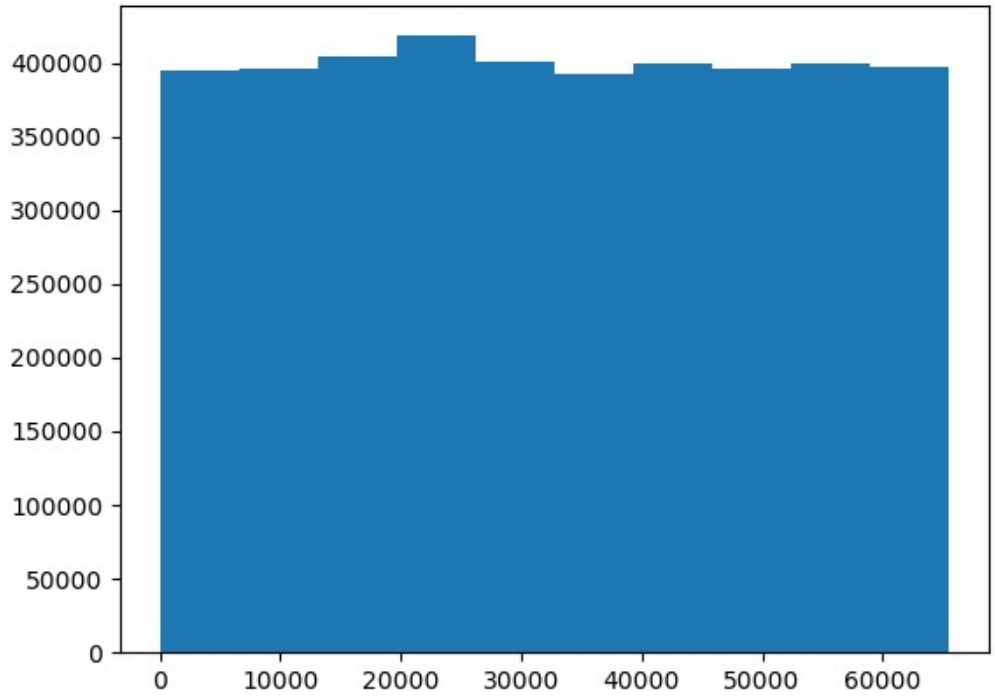
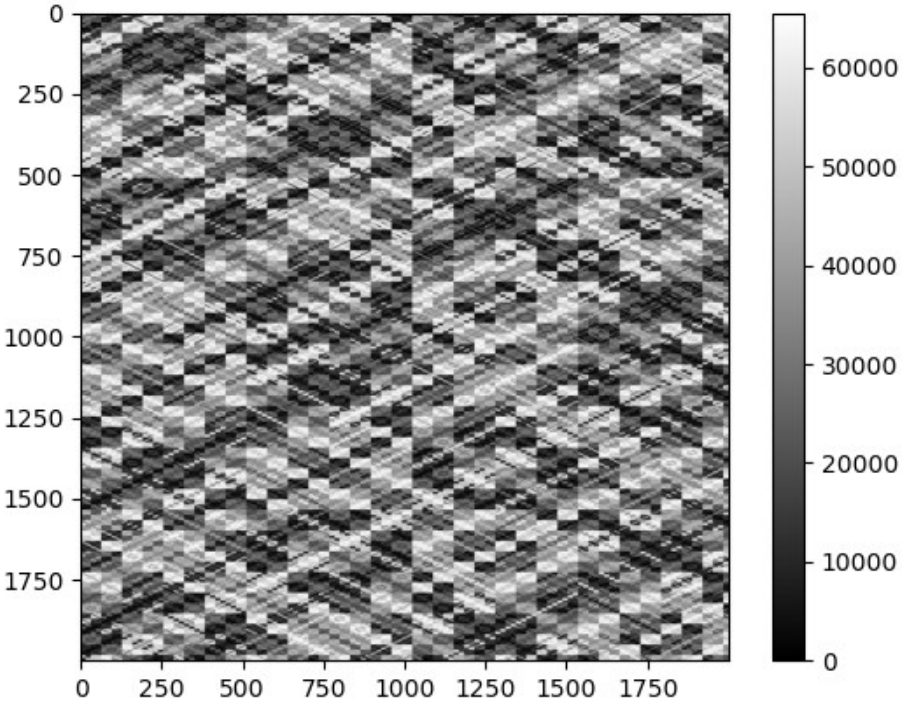
Procedural Generation Noise Development Sheet

```
import matplotlib.pyplot as plt
import numpy as np

def prng(x: np.uint16, y: np.uint16) -> np.uint16:
    x ^= y >> 1
    y ^= x << 3
    x ^= y >> 5
    y ^= x << 7
    return ((x + y) * 3) ^ 0b0101010100010100

terrain = np.empty((2000, 2000), dtype=np.uint16)

for y, x in np.ndindex(terrain.shape):
    terrain[x, y] = prng(x, y)

print(f'min: {np.min(terrain)}\nmax: {np.max(terrain)}\naverage:
{int(np.mean(terrain))}')
# print(f'goal min: {0}\ngoal max: {65535}\ngoal average: {65535 //
2}')

plt.hist(np.ravel(terrain))
plt.show()
```

```
min: 0
max: 65535
average: 32708
```




```
plt.imshow(terrain, cmap='binary_r')
plt.colorbar()
plt.show()
```


0
250
500
750
1000
1250
1500
1750
0
250
500
750
1000
1250
1500
1750
60000
50000
40000
30000
20000
10000
0